

CLAIMS

1. Auditory ossicle prosthesis (10; 30, 40; 50; 60) which replaces or bridges at least one element in the human auditory ossicle chain, whereby the auditory ossicle prosthesis (10; 30; 40; 50; 60) is made of an elastic material or a material having at least one articulated connection,  
characterised in that  
means for frequency adjustment (= tuning) for sound transmission in the middle ear are provided, in particular for changing the lever conditions in the auditory ossicle chain.
2. Auditory ossicle prosthesis in accordance with claim 1, characterised in that on one side the prosthesis is attached to the anvil projection (20) and on the other to the stapes (28), or is directly inserted into the inner ear, and in that the auditory ossicle prosthesis (10; 30; 40) from its connection to the anvil projection (20) largely copies the course of the natural anvil projection (20) to its end or beyond it and in the area of the natural end of the anvil projection (20) runs at an angle to the other end point of the auditory ossicle prosthesis (10; 30; 40) on the stapes (28) or on/in the inner ear.
3. Auditory ossicle prosthesis in accordance with claim 2, characterised in that the prosthesis is attached via a first clip (11; 11') to the anvil projection (20), on which a first rod (12; 12'; 12'') is arranged which ends in end designed as a ball (13), which is arranged in a U-shaped socket component (14) which gradually changes to a second rod (15, 15', 15'') which ends as a piston (16) or in a further clip.

4. Auditory ossicle prosthesis in accordance with claim 3, characterised in that the U-shaped socket component (14) has openings (18) in side walls (17) in which the ball (13) is arranged.
5. Auditory ossicle prosthesis in accordance 3 or 4, characterised in that the first and/or further clip (11; 11') is formed of two flexible tongues arranged in a V or U-shape.
6. Auditory ossicle prosthesis in accordance with any one of claims 3 to 5, characterised in that the first and/or further clip (11; 11') is roughened at its point of contact with the anvil projection (20) and/or the stapes.
7. Auditory ossicle prosthesis in accordance with any one of claims 3 to 6, characterised in that the first and/or further clip (11) has a holding grip (19).
8. Auditory ossicle prosthesis in accordance with claim 1, characterised in that the auditory ossicle prosthesis (50; 60) is attached at one side to the hammer grip (24) and at the other to the anvil or to the stapes (28) or is directly inserted into the inner ear.
9. Auditory ossicle prosthesis in accordance with claim 8, characterised in that the auditory ossicle prosthesis (50; 60) is arranged at the end point (25) of the hammer (= umbo) or directly adjacent to it.
10. Auditory ossicle prosthesis in accordance with any one of the preceding claims, characterised in that the auditory ossicle prosthesis (30; 40; 50) is at one end directly connected, in particular via a piston (16), by way of opening the human cochlea (= cochleotomy).

11. Auditory ossicle prosthesis in accordance with any one of the preceding claims, characterised in that the prosthesis or parts thereof are made of biocompatible synthetic materials, more particularly silicone or composite fibre materials.
12. Auditory ossicle prosthesis in accordance with any one of the preceding claims, characterised in that the prosthesis or parts thereof are made of titanium and/or of gold and/or of tantalum and/or of an alloy of said metals.
13. Auditory ossicle prosthesis in accordance with any one of the preceding claims, characterised in that the prosthesis or parts thereof are made of a material with memory effect.
14. Auditory ossicle prosthesis in accordance with any one of the preceding claims, characterised in that the means for frequency adjustment comprise a device for changing the points of attachment of the prosthesis on the hammer and/or on the anvil projection and/or on the stapes and/or at the inner ear in dependence on a predetermined frequency response.
15. Auditory ossicle prosthesis in accordance with any one of the preceding claims, characterised in that the means for frequency adjustment comprise lever elements, the effective lengths/lever conditions of which can be changed depending on a predetermined frequency response.
16. Auditory ossicle prosthesis in accordance with claim 15, characterised in that the lever elements comprise a lever section that extends the natural end of the anvil projection (20).

17. Auditory ossicle prosthesis in accordance with any one of the preceding claims, characterised in that the mass distribution of the individual components of the prosthesis is calculated as a function of a desired, predetermined frequency response of the sound transmission in the middle ear.
18. Auditory ossicle prosthesis in accordance with any one of the preceding claims, characterised in that at least one additional mass (23) is attached to one part of the auditory ossicle chain/the prosthesis in dependence on a desired, predetermined frequency response of the sound transmission in the middle ear.
19. Auditory ossicle prosthesis in accordance with claim 18, characterised in that the additional mass (23) is attached to part of the auditory ossicle chain or the prosthesis by way of a second clip (22).
20. Auditory ossicle prosthesis in accordance with any one of the preceding claims, characterised in that the prosthesis is connected to an active vibration component of a, more particularly implantable, hearing aid.